If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

12.40 Filling MP-7 with SF6 Mix

Text Pages 2 through 5

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman — Date

M. Wiplich

12.40 Filling MP-7 with SF6 Mix

1. Purpose

The purpose of this procedure is to define the sequence of activities required to fill MP-7 with SF6 mix.

2. Responsibilities

It is the responsibility of the person or persons executing this procedure to observe all safety rules.

3. Prerequisites

The person or persons executing this procedure shall have all formal training required of a TVDG Operator.

4. Precautions

None

5. Procedure

5.1 Evacuate Tank as per Vacuum Pumping MP7 - Air

5.2 Set Flow Controller FCV-2 to Manual and Valve and Close FCV-2.

5.3 In the Pit under MP-7:

5.3.1 Verify that the Four Hot Water Valves are Closed and then Open the Four Cold Water Valves.

5.3.2 Open Fill Valve V-52.

5.4 At the Gas Panel, set Air System Control Valve HOV-48 to Fill.

5.5 Set Pressure Controls as follows:

5.5.1 Set Pressure Controller PCV-1 to Auto and Regulate. Set Pressure to 0 PSI.

5.5.2 Verify that HOV-8, HOV-9 and HOV-12 are Closed.

5.5.3 Open HOV-11 and HOV-15.

5.5.4 Slowly Open East Bank Storage Valve HOV-16.

5.5.5 Raise the Set Point of PCV-1 to about 50.

5.5.6 Keep Increasing the Set Point of PCV-1 so that it is always 20 PSI above its Gauge Pressure up to 220 PSI.

> **Caution:**
> ***!!! Do Not Exceed 240 PSI !!!***

5.5.7 If the Set Point of PCV-1 is below 220 PSI when the Pressure stabilizes, Set PCV-1 to 220 PSI.

5.6 Leak Check Dryer Doors and Flanges.

5.6.1 If no leaks are found, continue filling at step 5.7.

5.6.2 If at any time the Dryer gaskets fail, Immediately isolate the Dryer by closing HCV-24, HCV-28, FCV-2 and one of the following valves:

If in the pit in the vicinity of the dryers, close V-52 or Close HOV-11 or PCV-1 at the Gas Panel

5.6.3 Proceed to Pumpout Instructions, pump out the tank and repair the leak.

5.7 Begin Filling the Tank by Opening FCV-2 to about 40%. Record Time and Storage Pressure on Pumpout Log Sheet. Make sure that the Gas Temperature as read on TC-2 Does Not Exceed 75 degrees. Closing FCV-2 will Decrease the Gas Temperature.

5.8 Turn the Recirculator ON when the Tank Pressure reaches 0 PSI.

5.9 Slowly Open FCV-2 to about 60% watching to see that the Tank Temperature does not increase rapidly.

5.10 When the Tank Pressure reaches 10 PSI, Leak Check the Tank Doors and other Ports that may have been opened. If there are no leaks, proceed with the following steps. Record Time, LE Vac and HE Vac on Pumpout Log Sheet.

5.11 Continue controlling the Tank Fill Rate by Opening FCV-2. FCV-2 should be 100% open by the time the Tank is at 30 PSI.

5.12 If the desired Tank Pressure can not be reached by Free-Flowing because the Storage-to-Tank Pressure difference is less than or equal to 100 PSI, continue filling using the Compressors as follows:

5.12.1 Stop filling by Closing HOV-16 and HOV-11.

5.12.2 Open HOV-8 and HOV-9 to set up Compressor Bypass.

5.12.3 Open Compressor Input Valves V-3 and V-5.

5.12.4 Verify that Compressor Output Valves V-4 and V-6 are Open.

5.12.5 Open the Water Supply Valves to the Compressors.

5.12.6 Start both Compressors, (one at a time). Record Time, Tank Pressure, LE Vac and HE Vac on Pumpout Log Sheet.

5.12.7 Close HOV-15 to get out of Bypass.

5.12.8 Open HOV-11 to start Gas Transfer from Storage to Tank.

5.13 Gas Flow is now controlled by HOV-16. Slowly Open HOV-16 to increase the gas flow to the Compressors. During the initial phase of gas flow, keep checking the following:

5.13.1 Make sure that the Compressor Input Pressure does not exceed 125 PSI.

5.13.2 Make sure that the Compressor Output Pressure does not exceed 500 PSI.

5.13.3 Make sure that the Pressure at PCV-1 does not exceed 240 PSI.

Note:
IF ANY OF THE ABOVE PRESSURES APPROACHES THE STATED LIMITS, CLOSE HOV- 16 to stop Gas flow into the Compressors and OPEN HOV-15 Slowly to go into Bypass. When the Pressure is stable, CLOSE HOV-15 and Return to Step 12.

5.14 Continue filling the Tank until the desired pressure is reached.

5.15 Stop filling as follows:

5.15.1 Close HOV-16.

5.15.2 Turn One Compressor OFF.

5.15.3 When Compressor Suction Pressure reaches 0 PSI, Close HOV-11 and Immediately Open HOV- 15.

5.15.4 Close V-52 in the Pit under MP-7.

5.16 Recover the gas remaining in the Fill Lines as follows:

5.16.1 Close HOV-8, Open HOV-11 and when Compressor Output Pressure reaches the Storage Tank Pressure, Open HOV-18.

5.16.2 Pump until the Compressor Suction Pressure reaches 0 PSI. (This is a very short time)

5.16.3 Close HOV-11 and HOV-18. Open HOV-8 to put Compressor into Bypass.

5.16.4 Turn Compressor OFF. Record Time, Tank Pressure, LE Vac, HE Vac and Storage Pressure on the Pumpout Log Sheet.

5.16.5 Close HOV-8, HOV-9, HOV-15, PCV- 1, FCV-2, V-3, V-5 and the Water Supply Valves to the Compressors.

5.16.6 Open Gas Dryer Valves HCV-24 and HCV-28 to allow gas to circulate through gas dryers.

5.16.7 Record Both Tank Pressures and Storage Pressure on the Pumpout Log Sheet.

5.17 In the gas house, CLOSE the three EAST BANK isolation valves.

6. Documentation

6.1 Complete Pumpout Log Sheet as required.

7. References

C-A-OPM 12.43 “Vacuum Pumping MP7 – Air”.

8. Attachments

None